

# Super Potent Opioid Risk Assessment and Response

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# Super Potent Opioids and Other Anesthetics

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Fentanyl\*  
Carfentanil  
Thiafentanil  
Hydromorphone\*  
Etorphine  
Buprenorphine\*

Butorphanol  
Tramadol\*  
Medetomidine  
Dexmedetomidine\*  
Detomidine  
Xylazine

\*drugs commonly used in human medicine



# Risk Assessment – 1997 Protocol



## 2. Wash site

- If the exposure was via oral, ocular, or dermal routes, flush the narcotic exposed area with copious amounts of water. Do not use hot water.
- Avoid self-contamination (use gloves).

## 3. Establish IV line

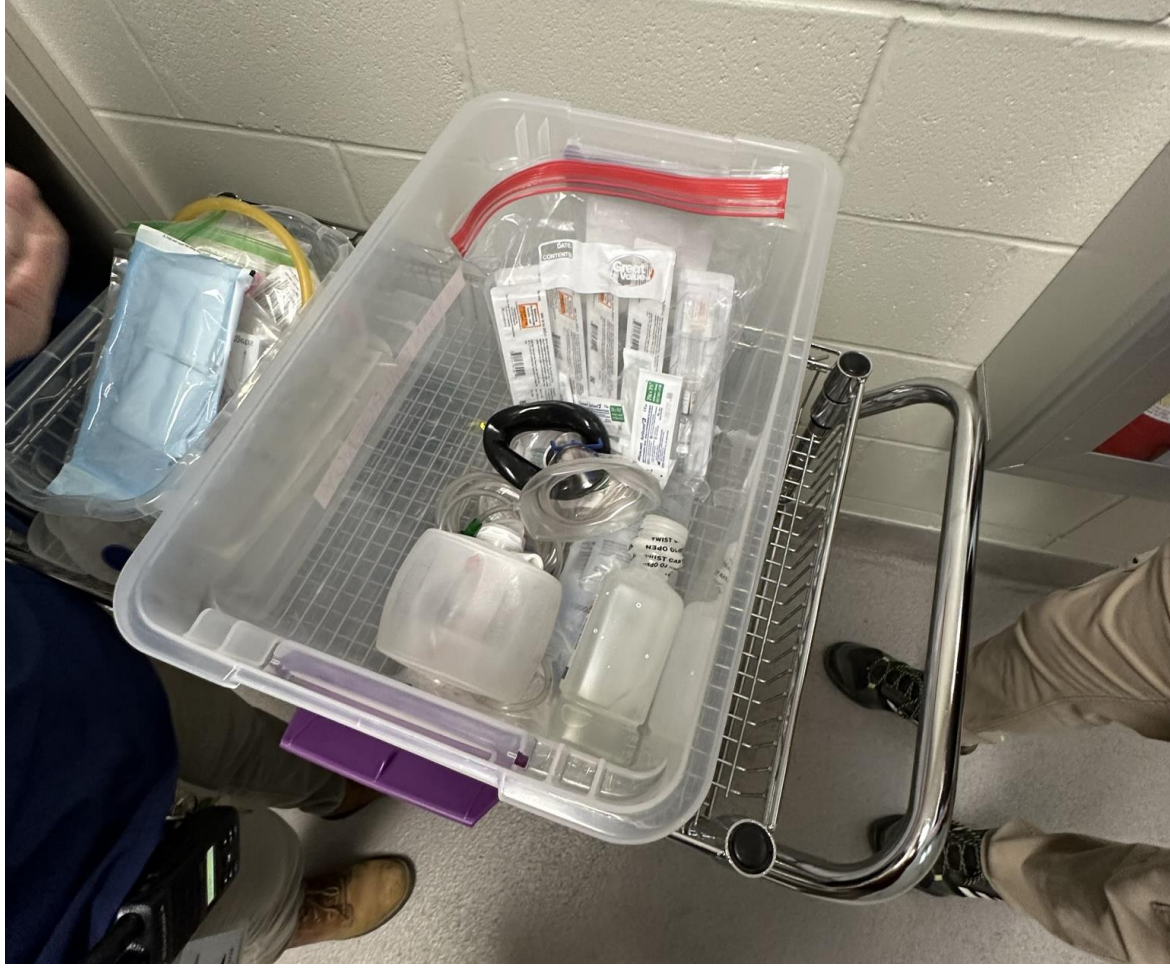
- Establish IV access by placing one 23 ga. butterfly catheter and taping into place.
- Flush line with sterile saline to keep it patent
  - Prepare 1 pre-filled naloxone syringe, have the remnant handy
  - Prepare oxygen for use

## 4. Administer Naloxone

- If patient is NOT showing signs, monitor only (pulse and respiration).
- If patient is showing signs (losing consciousness, unable to walk or follow commands):
  - Administer **5 syringe-full** (10 ml) Naloxone **IM** in the shoulder or thigh
  - Administer **up to 15 syringe-full** (30 ml) of Naloxone **IV** push (slowly, to effect) utilizing pre-filled syringe, butterfly catheter + injection cap or IV catheter.
  - If an IV line cannot be established, repeat Naloxone doses (**5 syringes = 10 ml IM**) until patient wakes up and is able to talk.



# Preparations @ Vet clinic



# Pre-job plan and charging dart @ location



# Handling of the dart

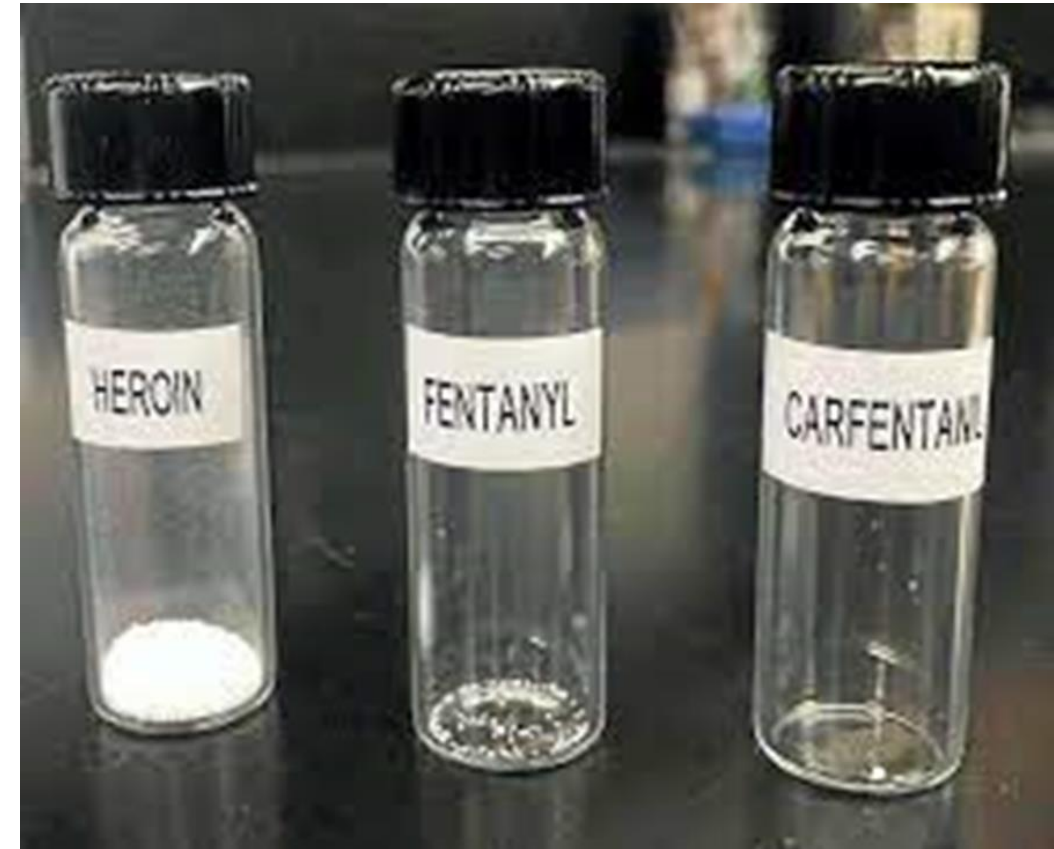


# Removal and storage of the dart



# Relative Potency

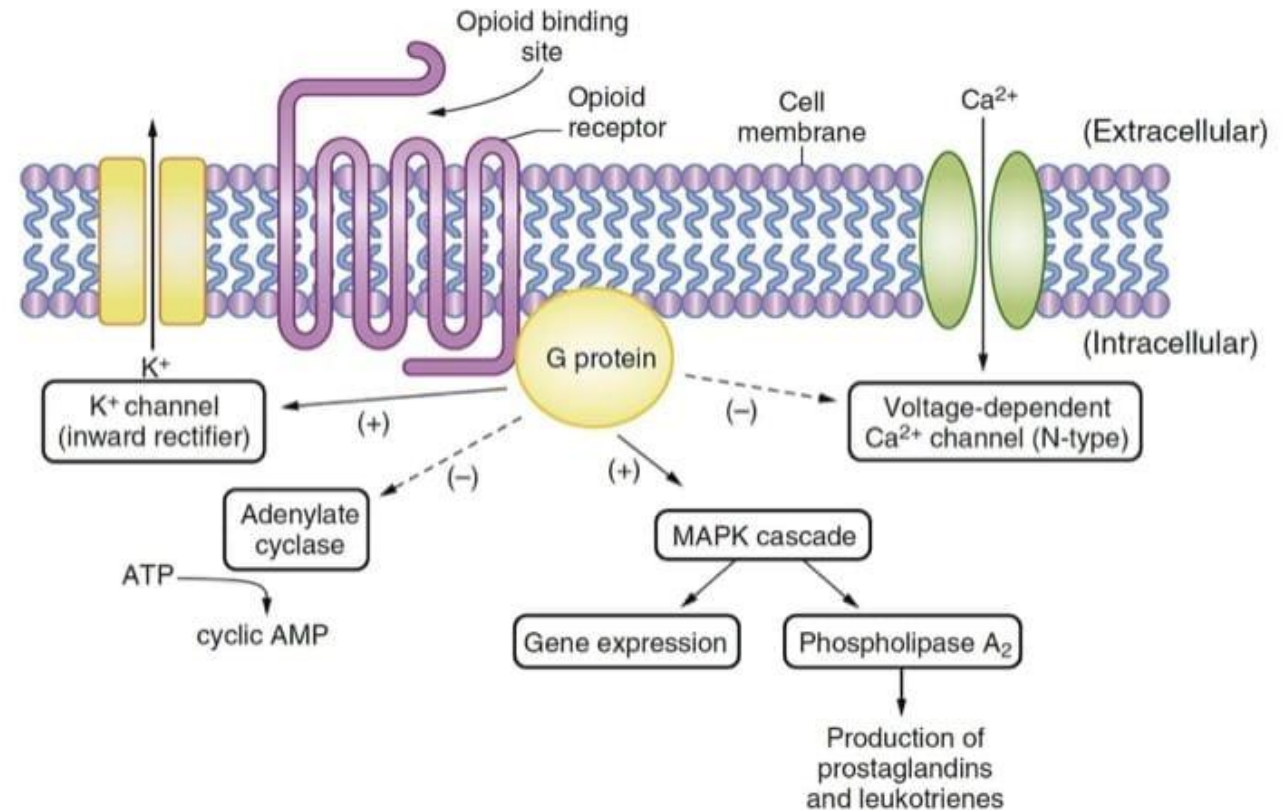
- Hydromorphone 2mg = Morphine 10mg
- Tramadol 100mg = Morphine 10mg
- Butorphanol 3x more potent than morphine
- Buprenorphine 0.4mg = Morphine 10mg (50x more potent)
- Fentanyl 100mcg = Morphine 10mg
- ***Etorphine*** 1,000 – 4,000x more potent than morphine
- ***Carfentanil*** 10,000x more potent than morphine, 100x more potent than fentanyl
- ***Thiafentanil*** (slightly less than carfentanil) 10,000x potency of morphine (4,000x that of heroin)



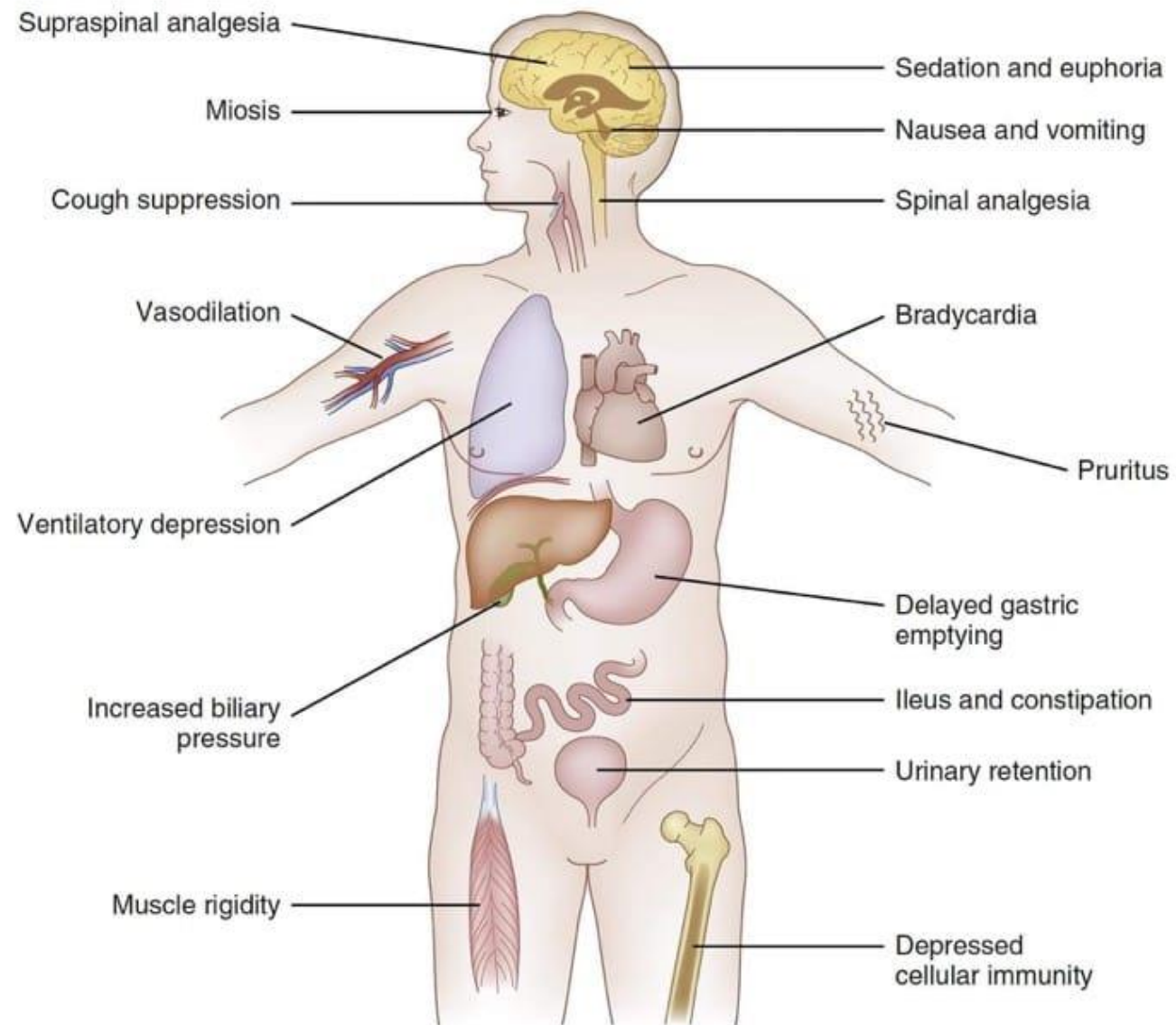


# Mechanism of Action

Morphine has an affinity for delta, kappa, and mu-opioid receptors. This drug produces most of its analgesic effects by binding to the mu-opioid receptor within the central nervous system (CNS) and the peripheral nervous system (PNS).



# Physiologic Effects





A photograph of an eye with a severely constricted pupil, a sign of opioid overdose.

## Physiologic Effects

- APNEA (rapid with more potent opioids)
- Miosis (constricted pupils)
- Altered Mental Status
- Hypotension

# Narcan

## Indications:

- Opioid OD resulting in respiratory depression

## Contraindications:

- Hypersensitivity (Rare)

## Cautions:

- May result in opioid withdrawal in opioid dependence
- Pre-existing cardiac disease

# Narcan

## Mechanism of Action:

High affinity for opioid receptor in the brain displacing opioids

## Duration of Action:

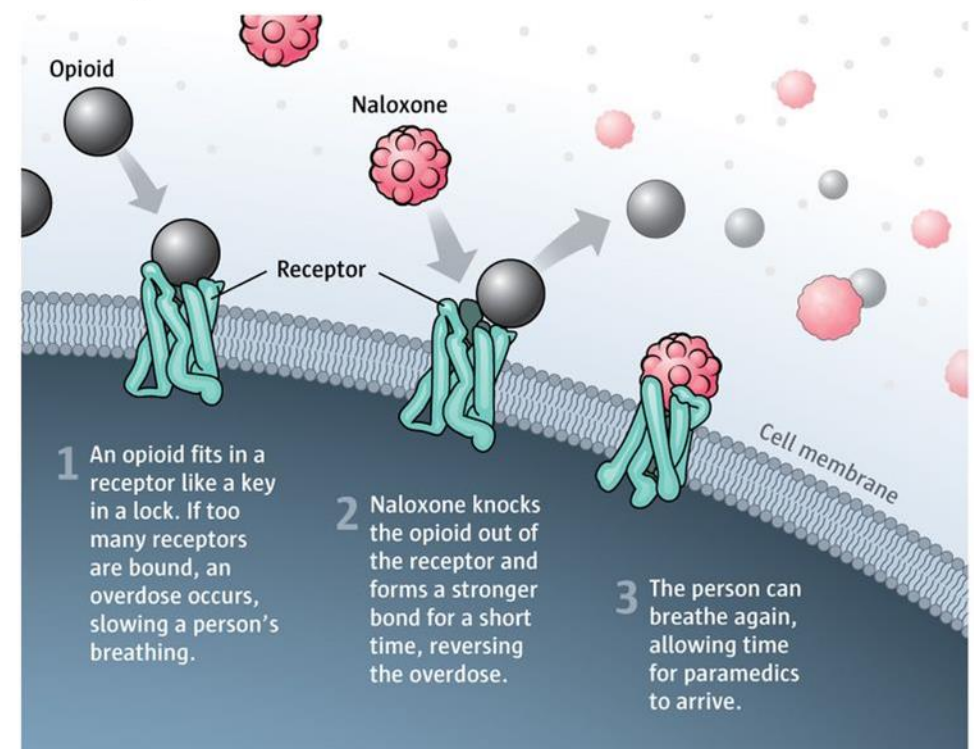
Onset: 1-2 min IV;  
2-5 min IM

Half-life: 30-90 min.

**(shorter duration than opioids)**

## How does naloxone work?

Opioid drugs bind to receptors in the brain, messing with neural pathways. But naloxone binds even better and can knock opioids out of receptors, restoring normal functions in the body.



Multiple sources, including the National Harm Reduction Coalition

# Narcan Complications

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- Acute Withdrawal Syndrome (opioid addicts)
- Agitation
- Dyspnea
- Hypertension
- Hypotension
- Vtach/Vfib (rare)
- Pulmonary Edema\*
- Cardiac Arrest (rare)



# Narcan Administration

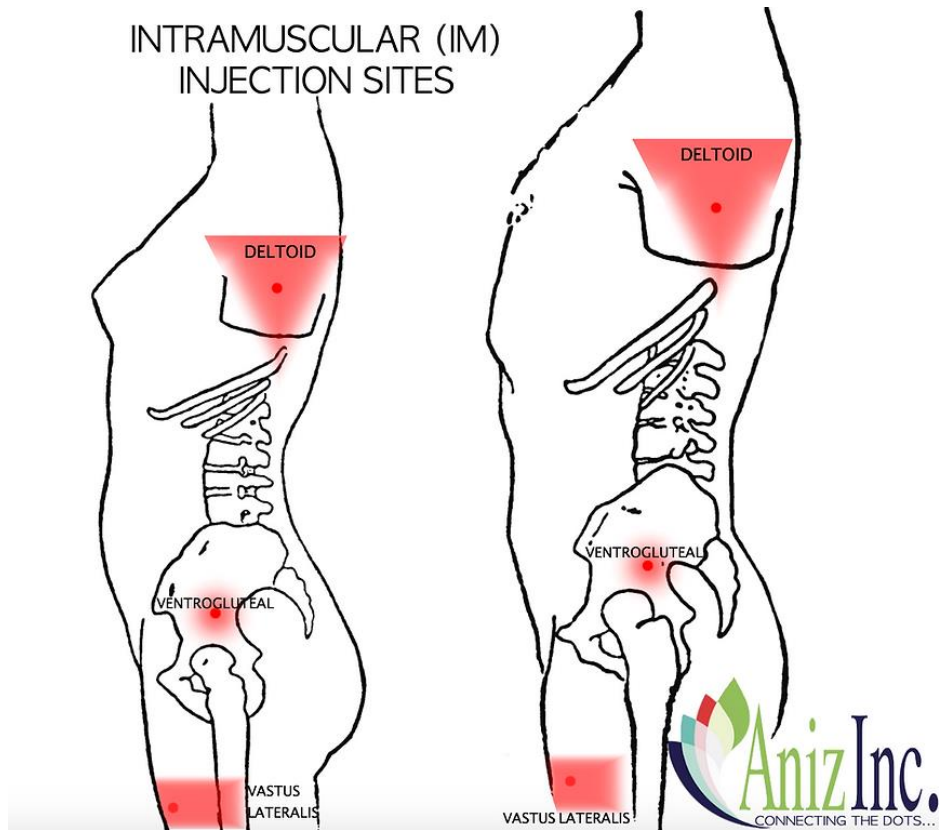
Dose: Intranasal 4mg/8mg



Do not press plunger until you are ready to administer the dose

**2 PLACE** the tip of the nozzle in either nostril until your fingers touch the bottom of the patient's nose.





# Narcan Administration

- Dose: IV/IM/SC 0.4 – 2mg (escalating as needed)

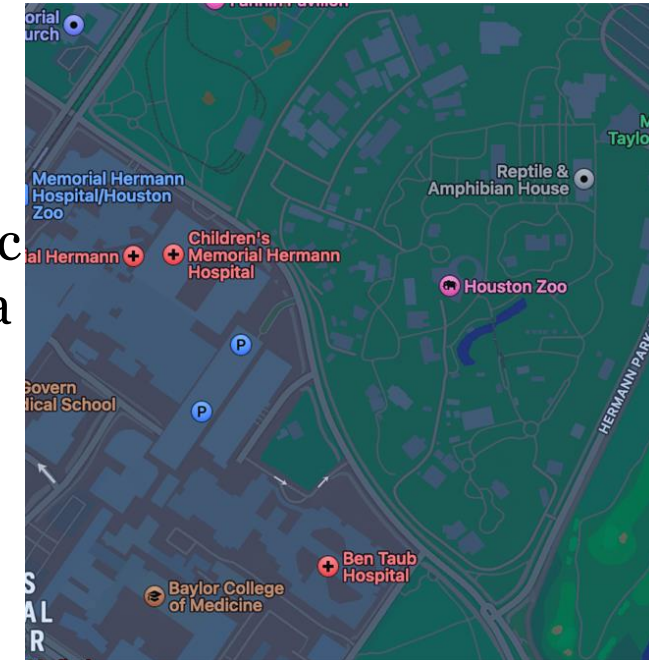


# Alpha-2 Adrenergic Agonist (Anesthetic)

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- Medetomidine, Xylazine, Detomidine, Dexmedetomidine
- Mechanism of Action: bind receptors and ultimately decrease sympathetic activity (decreased BP/HR), inhibit NE release
- Physiologic Effects:
  - Peripheral Vasoconstriction/Bradycardia
  - Humans: HTN, Tachycardia followed by Hypotension (reduced Cardiac Output) and Bradycardia, Respiratory Depression, Coma, Dysrhythmia (AV Block)
- Treatment
  - Reversal Agent Atipamezole and Yohimbine approved for animals, not humans
  - Supportive Care, Immediate Transfer to BT
  - AJEM: UCSD proposed a protocol if exposure and no critical care nearby, consider Atipamezole IM if patient decompensating
  - Treat Hypotension with fluids/pressors, Bradycardia treat if unstable with medications or pacing



# Houston Zoo Super Potent Opioid Protocol

Particularly for Carfentanil, Thiafentanil, and Etorphine

Zoo Staff Sedating Large Animal (Hot Zone):

- Suggest N95, gloves, and eye protection (protect mucous membranes and inhalation)
- Each provider IN Narcan 4mg/8mg on their person

Standby Medical Staff (Warm Zone):

- Wind direction taken into account
- 1-2 EMT's with Jump Bag including Bag Valve Mask/O2
- Narcan IM/IN capable (multiple vials for redosing PRN)
- N95, gloves, and eye protection, Body Substance Isolation

# HZ Protocol

- Clinical Areas
  - IN Narcan available to all staff
  - All exposures result in Zoo EMS contact for observation and transport to the ER
  - All Zoo EMS staff will be EMT-B's capable of providing IM Narcan
- Alpha-2 Agonist Exposures
  - Supportive care
  - Transfer to hospital
  - No reversal agent
  - Immediate transfer to Ben Taub Hospital (Toxicologist Alex Harding, MD)





Questions